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Standards Development Branch 135 St. Clair Ave. W, Ste. 100 Toronto, Ontario. M4V 1P5

Memorandum:

To:

Users of the "Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Use at Contaminated Sites in Ontario

1996"

From:

Standards Development Branch

Date:

December 3, 1996

Subject:

ERRATUM: SOIL AND GROUNDWATER CRITERIA CHANGES

Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Use at Contaminated Sites in Ontario - 1996"

This notice provides instructions for the revision of certain text and appendices in the guideline support document entitled: Rationale for the Development and Application of Generic Soil, Groundwater and Sediment Criteria for Use at Contaminated Sites in Ontario - 1996.

The need for these changes has resulted from the detection of a mathematical error in one of the vapour transport models that was used to modify the soil criteria for medium/fine textured soil conditions (shown in round brackets in the criteria Tables A and B). These changes have also resulted in the addition of a medium/fine textured soil criterion for petroleum hydrocarbons (gas/diesel) in the industrial/commercial land use category of Table B. There is also the need for asterisks in Tables C and D, to signal cases where the values are now similar to the corresponding Table A and B values. In addition, a unit transcription error from one of the aquatic toxicity studies that was utilized has been detected which affects all soil and groundwater remediation criteria for pyrene (Tables A-D).

The revisions are as follows:

1. Revisions to Text in Section 3.2.3.2.1 of the Rationale Document

Two changes should be made to the text at the bottom of page 37 (shown here as italicized text for clarification):

- a) Where it states "and after making all unit conversions, S/IA equation (5) becomes:" should read "and after making all unit conversions (refer to Appendix B.1.11), S/IA equation (5) becomes:".
- b) Where it states "Therefore, for medium/fine textured soils, the S/IA dilution factor (D) in eq. (4) of the S/IA vapour transport model was given a value of 6.25 x 10⁴ should read "Therefore, for medium/fine textured soils, the dilution factor (D) in eq. (4) of the S/IA vapour transport model was given a value of 6.25 x 10⁴ and a factor of 6.25 was added to eq. (7)."

2. Revisions to Text in Section 3.2.4.5 of the Rationale Document

A change should be made to the text in the fourth paragraph of this section (shown here as italicized text for clarification):

Where it states "Where groundwater is non-potable, the Level II TPH criterion (1000 ppm) applies to all surface soils in both the residential/parkland and industrial/commercial land use categories medium/fine textured soils." should read "Where groundwater is non-potable, the Level II TPH criterion (1000 ppm) applies to all surface soils in both the residential/parkland and industrial/commercial land use categories for coarse textured soils as well as the residential/parkland land use category for medium/fine textured soils. A value of 2000 ppm (2 x Level II criterion) was selected as the criterion for medium/fine textured surface soils in the industrial/commercial land use category."

3. Revisions to Text in Section 3.2.5.2 of the Rationale Document

The words in brackets "(Table C and D)" should be removed from the last sentence in the second paragraph of this section. The sentence should read "The soil pH range acceptable for applying generic criteria to sub-surface soils (>1.5m depth) was set at pH 5.0 to 11.0 because pH at depth is naturally higher than at the surface due to higher levels of carbonates."

4. Revisions to Appendix A.1: Ontario Soil, Groundwater and Sediment Quality Criteria Tables

The nature of the revisions to the criteria tables in Appendix A.1 are as follows:

- a) In Tables A and B, the actual numbers in round brackets change, while in Tables C and D, double asterisks are now required for some criteria, as the unchanged Table C and D criteria values are now numerically equal to the corresponding medium/fine textured soil criteria values in Tables A and B, respectively. In addition, a medium/fine textured soil criterion is added for petroleum hydrocarbons (gas/diesel) in the industrial/commercial land use category of Table B.
- b) In the second case, a unit transcription error from one of the toxicity studies that was utilized has been detected which affects all soil and groundwater remediation criteria for pyrene in Tables A to D.
- c) In the third case, a few soil criteria values in Tables C and D have been identified that should have been marked with one asterisk, as the levels in Tables C and D are numerically equal to the corresponding values in Tables A and B. There is no change in the numerical values for these parameters. Also, for clarification the caveat at the top of Tables A and B should be revised to read as follows: "Soil Criteria for Inorganics in this Table apply only where Surface Soil pH is 5.0 to 9.0 and for Full Depth Use, the Subsurface Soil pH is 5.0 to 11.0"

The following four tables show the revisions that need to be made to medium/fine textured soil remediation criteria for a number of organic chemicals in Appendix A.1.1 (Table A), Appendix A.1.2 (Table B), Appendix A.1.3 (Table C) and Appendix A.1.4 (Table D)

TABLE A: Revised Surface Soil and Groundwater Remediation Criteria for Three Land Uses (Agricultural, Residential/Parkland and Industrial/Commercial) in a Potable Groundwater Situation.

TABLE A:	Revi	ued Sail Remediation Criteria (ug/g)		Potable Groundwater Criteria (ug/L)
Chemical Compound	Agricultural Land Use	Residential/ Parkland Land Use	Industrial/ Commercial Land Use	All Land Use Categories
BROMOMETHANE	(0.38)	(0.38)	(0.38)	
CARBON TETRACHLORIDE	(0.64)	(0.64)	(0.64)	
DICHLOROETHANE, 1,2-	(0.05)	(0.05)	(0.05)	
DICHLOROETHYLENE, 1,1-	(0.015)	(0.015)	(0.015)	
DICHLOROPROPANE, 1,2-	(0.12)	(0.12)	(0.12)	
DICHLOROPROPENE, 1,3-	(0.04)	(0.04)	(0.04)	
ETHYLENE DIBROMIDE	(10.01)	(0.01)	(0.012)	
HEPTACHLOR	(0.12)	(0.12)	(0.15)	
HEXACHLOROBUTADIENE	(2.2)	(2.2)	(2.2)	_
HEXACHLOROETHANE	(6.3)	(6.3)	(8.5)	
PYRENE	250	250	250	
TETRACHLOROETHANE, 1,1,1,2-	(0.12)	(0.12)	(0.12)	
TRICHLOROETHYLENE	(3.9)	(3.9)	(3.9)	
VINYL CHLORIDE	(0.0075)	(0.0075)	(0.0075)	

^() Criterion value in brackets applies to medium/fine textured soils only.

TABLE B: Revised Surface Soil and Groundwater Remediation Criteria for Two Land Uses (Residential/Parkland and Industrial/Commercial) in a Non-Potable Groundwater Situation.

TABLE B:	Ravised Soil Remodii (mg/g)	ation Criteria	Revised Non-Putable Groundwater Criteria (ng/L)
Chemical Compound	Ranidon tini/ Parkland Land Use	Industrial/ Commercial Land Use	Both Land Use Categories
BENZENE	(25)	(25)	
BIS (2-CHLOROISOPROPYL)ETHER	(1.9)	(26)	
BROMOFORM	(14)	(14)	
BROMOMETHANE	(0.38)	(0.38)	
CARBON TETRACHLORIDE	(0.64)	(0 64)	
CHLOROBENZENE	(30)	(30)	
CHLOROFORM	(4.9)	(4.9)	
DICHLOROETHANE, 1,1-	(100)	(140)	
DICHLOROETHANE, 1,2-	(0.14)	(0.14)	
DICHLOROETHYLENE, 1,1-	(0.015)	(0.015)	
DICHLOROPROPANE, 1,2-	(0.12)	(0.12)	
DICHLOROPROPENE, 1,3-	(0.041)	(0.041)	
ETHYLBENZENE	(500)	(1000)	
ETHYLENE DIBROMIDE	(0.01)	(0.02)	
HEPTACHLOR	(0.12)	(0.15)	
HEXACHLOROBUTADIENE	(2.4)	(2-4)	
HEXACHLOROETHANE	(6.3)	(13)	
METHYL BOBUTYL KETONE	(69)	(69)	
METHYL TERT BUTYL ETHER		(410)	
METHYLNAPHTHALENE, 2-(*1-)	(1000)	(1600)	
PETROLEUM HYDROCARBONS (gas/dissel)		(2000)	
PYRENE	250	250	
STYRENE	(7.7)	(7.7)	
TETRACHLOROETHANE, 1,1,1,2-	(0.12)	(0.12)	
TETRACHLOROETHANE, 1,1,2,2-	(0.23)	(0.23)	
TOLUENE	(150)	(150)	
TRICHLOROETHYLENE	(3.9)*	(3.9)*	
VINYL CHLORIDE	(0.0075)	(0.0075)	
XYLENES	(210)	(210)	

^() Critation value in brackets applies to medium/line textured soils only. Soil criterion adopted from Table A to account for degradation to vinyl chloride

TABLE C: Revised Sub-Surface Soil Remediation Criteria for Two Land Uses (Residential/Parkland and Industrial/Commercial) in a Potable Groundwater Situation.

TABLE C:	Revised Sail Remed (ug/g)	
Chemical Compound	Residential/ Parkland Land Use	Industrial/ Commercial Land Use
CHRYSENE		Criterion requires one asterisk after value
DICHLOROETHANE, 1,2-	Criterion requires two asterisks after value	Criterion requires two asteriaks after value
DICHLOROETHYLENE, CIS-1,2-	Criterion requires one asteriak after value	Criterion requires one asterisk after value
DICHLOROETHYLENE, TRANS-1,2-	Criterion requires one asteriak after value	Criterion requires one asteriak after value
DICHLOROPROPENE, 1,3-	Criterion requires two asterisks after value	Criterion requires two asterisks after value
ETHYLENE DIBROMIDE		Criterion requires two asterisks after value
HEPTACHLOR		Criterion requires two asterisks after value
HEXACHLOROBUTADIENE	Criterion requires two asterisks after value	Criterion requires two asterisks after value
HEXACHLOROETHANE		Criterion requires two asteriaks after value
PYRENE	250*	250°
TETRACHLOROETHYLENE	Criterion requires one asteriak after value	Criterion requires one asterisk after valu
TRICHLOROETHANE, 1,1,1-	Criterion requires two asterisks after value	Criterion requires two asterisks after value
TRICHLOROETHYLENE	Criterion requires two asterisks after value	Criterion requires two asterisks after value

^{*} Criterion value is the same as the corresponding criterion in Table A.

TABLE D: Revised Sub-Surface Soil Remediation Criteria for Two Land Uses (Residential/Parkland and Industrial/Commercial) in a Non-Potable Groundwater Situation.

TABLE D:	Rayland Soll Remedi (ug/g)	
Chemical Compound	Residential/ Parkland Land Use	Industrin <i>V</i> Commercial Land Use
DICHLOROETHYLENE, CIS-1,2-	Criterion requires one asteriak after value	Criterion requires one estensk after value
DICHLOROETHYLENE, TRANS-1,2-	Criterion requires one astensk after value	Criterion requires one asteriak after value
HEPTACHLOR		Criterion requires two asteraks after value
METHYL ISOBUTYL KETONE	Criterion requires two asterisks after value	Criterion requires two asterisks after value
METHYL TERT BUTYL ETHER		Criterion requires two asterisks after value
METHALNAPHTHALENE 2-(*1-)		Criterion requires two asterisks after value
PYRENE	250*	250*
TETRACHLOROETHYLENE	Criterion requires one asterisk after value	Criterion requires one asteriak after valu
TRICHLOROETHANE, 1,1,1-	Criterion requires two asterisks after value	Criterion requires two asterisks after value
TRICHLOROETHYLENE	Criterion requires two asteriaks after value	Criterion requires two asteriaks after valu

^{*} Criterion value is the same as the corresponding criterion in Table B.

5. Revisions to Soil and Groundwater Component Values for Pyrene in Appendices A.2.1 to A.2.8.

The following revisions are required in each of the 18 soil remediation criteria component summary tables comprising Appendix A.2.1 through A.2.8:

- a) Replace the pyrene value of 1.3 in the column labelled "S-/GW3" with the value 250.
- b) In each case, the new value remains bold faced and the cell is shaded to indicate that this component was selected as the soil remedation criterion for pyrene.

In addition, each of the two groundwater remediation criteria component summary tables (the final table in Appendix A.2.1 and A.2.2, respectively) requires the following revisions:

- a) Replace the pyrene value of 0.04 in the column labelled "GW3" with the value 40.
- b) The font of the new value is <u>bold faced</u> and the cell is <u>shaded</u> to indicate that this component was selected as the groundwater remediation criterion for pyrene.
- c) The pyrene value of 0.2 in the "MOEE MDL Value" column is returned to a normal font and the cell is returned to an <u>unshaded</u> format.
- 6. Revisions to S/IA Component Values in Appendices A.2.5 and A.2.6: Table A and B Criteria Components Medium/Fine Textured Soil (Surface/Full Depth).

The following five criteria component tables show the revisions that need to be made as a result of the mathematical correction in the soil-to-indoor air vapour transport model for medium/fine textured soil. All values shown in the "Soil/Ind Air" column of each table are revised values.

Each revised soil-to-indoor air component value, which continues to be the selected soil remediation criterion for a given chemical, is shown in bold font and in a shaded cell.

For some chemicals in each table, a different component value has become the selected soil remediation criterion as a result of revisions to the soil-to-indoor air component values. In these cases the other component value is shown in bold font and in a shaded cell along with the revised soil-to-indoor air component value which remains in a normal font and an unshaded cell.

7. Revision to Substitute Criteria Component Value for Petroleum Hydrocarbons (gas/diesel) in Appendix A.2.6: Table B Criteria Components - Non-Potable Groundwater Situation - Medium/Fine Textured Soil (Surface/Full Depth)

The following revision is required in the industrial/commercial category summary table of Appendix A.2.6:

a) Replace the petroleum hydrocarbon (gas/diesel) value of 1000 in the column labelled "Substitute Criteria" with the value 2000.

TABLE A: COMPONENTS FOR MOEE SOIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - POTABLE GROUNDWATER SITUATION - MEDIUM/FINE TEXTURED	MOEE S	OIL REME	DIATION	CRITERIA	(SURFAC	SE/FULL D	EPTH) - P	OTABLE (SROUNDWAT	ER SITUATI	ON - MEDIL	JM/FINE TE	XTURED
MEDIUM/FINE TEXTURED SOIL					AG	RICULTUI	RAL CATE	GORY (all	AGRICULTURAL CATEGORY (all depths) (ug/g)				
	MOEE	MASS.	ONT Soil	Celling	Ecotoxici	Ecotoxicity Critiaria	Substitute Criteria	Critteria	Soll Contact	Soll Le	Soil Leaching (Mod. MASS.)	VSS.)	Solvind Air
CHEMICAL PARAMETER	Soil MDL	ğ	Bkgrd	Value	MOEE	Neth. C	Value	Basis	S1 Risk	S-/GW1	S-/GW2	S-/GW3	
ACETONE													12000
ALDRIN													0.93
BENZENE													(0.19) 33
BENZO(a)PYRENE													300000
BIS(2-CHLOROETHYL)ETHER													0.81
BIS(2-CHLOROISOPROPYL)ETHER													5.1
BIS(2-ETHYLHEXYL)PHTHALATE													1000000
BROMOFORM													14
BROMOMETHANE													6.38
CARBON TETRACHLORIDE													(0.044) 0.64
CHLORDANE													110
CHLOROBENZENE													(20) 80
CHLOROFORM													(0 069) 4.9
DICHLOROBENZENE, 1,2- (4-DCB)													1700
DICHLOROBENZENE, 1,4- (p-DCB)													5200
рот	1												2900
DICHLOROETHANE, 1,1.													140
DICHLOROETHANE, 1,2.										0.05			0.14
DICHLOROETHYLENE, 1,1-													0.015
DICHLOROPROPANE, 1,2-													0.52
DICHLOROPROPENE, 1,3-										P0'0			0 041
DIELDRIN													1.3
ETHYL BENZENE													1800
ETHYLENE DIBROMIDE									0.61 t	0.012			0.035
HEPTACHLOR									0.52 t				0.53
HEPTACHLOR EPOXIDE													13
HEXACHLOROBENZENE													71
HEXACHLOROBUTADIENE										2.2			2.4
HEXACHLOROETHANE									f.3 nc				24
METHYL ETHYL KETONE													11000

TABLE A: COMPONENTS FOR MOEE SOIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - POTABLE GROUNDWATER SITUATION - MEDIUM/FINE TEXTURED	R MOEE S	OIL REMI	EDIATION	CRITERIA	(SURFACE/FU	LL DEPTH) .	POTABLE	GROUNDWAT	TER SITUAT	ION - MEDIU	JM/FINE TE	XTURED
MEDIUM/FINE TEXTURED SOIL					AGRICUL	TURAL CA	TEGORY (a	AGRICULTURAL CATEGORY (all depths) (ug/g)	(1			
	MOEE	MASS.	ONT Soll	Celling	Ecotoxicity Criteria	-	Substitute Criteria	Soil Contact	Soll Le	Soll Leaching (Mod. MASS.)	(38.)	Solvind Air
CHEMICAL PARAMETER	Solf MDL	ğ	Bkgrd.	Value	MOEE Neth. C	C	Basis	S1 Risk	SAGWI	8-KGW2	SAGW3	
METHYL ISOBUTYL KETONE												360
METHYL TERT BUTYL ETHER												740
METHYLENE CHLORIDE												840
METHYLNAPHTHALENE, 2- ("1-)												1800
NAPHTHALENE												760
PENTACHLOROPHENOL												7300
PHENOL												290000
STYRENE												(2.6) 7.7
TETRACHLOROETHANE, 1,1,1,2-												0,12
TETRACHLOROETHANE, 1,1,2,2-												0.23
TETRACHLOROETHYLENE												(24) 140
TOLUENE												210
TRICHLOROBENZENE, 1,2,4-												940
TRICHLOROETHANE, 1,1,1-												160
TRICHLOROETHANE, 1,12-												(12) 580
TRICHLOROETHYLENE									3.8			(0.71) 6.6
TRICHLOROPHENOL 2,4,6-												7200
VINYL CHLORIDE												0.0075
XYLENES												210
c Cancer Risk no Noncancer Risk												
+ S-1 Risk Value determined from human health toxicity data derived by MOEE Standard Development Branch staff.	health toxicity	data derived	by MOEE Sta	ndard Develo	pment Branch staff.							
* MOEE Soil Clean-up Guideline (SCUG) for boron is bar) for boron is ba	od a no per	t water extract.	and was dev	sed on a hot water extract, and was developed by MOEE StandardsDevelopment Branch staff.	indards Developri	nent Branch sta	וני				
** MOEE Soil Clean-up Guidaline (SCUG) for cadmium (coarse textured soil) is based on human health, but is applied hea for the protection of grazing animals) for cadmium (coarse textu	red soil) is bar	nemny no pe	health, but is applied	here for the prot	tection of grazin	g animals	Soil criterion	Soil criterion is not available.		
() Value in bracketa is based on meeting the indoor air cancer risk concentration which is below the indoor air background concentration used in the Mass, approach.	the Indoor air co	ancer risk co.	ncentration wh	ich is below th	ne Indoor air backgou	nd concentration	used in the Ma	iss. approach.				
(*1-) 2-metryl raphthalene soil criterion is applicable to 1-metryl naphthalene with the provision that if both are detacted in the soil, the aum of the two concentrations cannot exceed the soil orderion.	opticable to 1-m	ethyl naphth	alene with the	provision that	if both are detected in	n the soll, the au	im of the two co	ncentrations cannot	t exceed the soil	criterion.		

TABLE A: COMPONENTS FOR MOEE SOIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - POTABLE GROUNDWATER SITUATION - MEDIUM/FINE TEXTURED SOILS	MOEE SC	OIL REME	DIATION (CRITERIA	(SURFACE/FUL SOILS	LL DEPTH) -	POTABLE (SROUNDWAT	ER SITUATIO	ON - MEDIUM	FINE TE)	(TURED
MEDIUM/FINE TEXTURED SOIL					R	RESIDENTIAL PARKLAND CATEGORY (49/9)	KLAND CATEC	ORY (ug/g)				
	MOEE	MASS	ONT Solf	Celling	Ecotoxicity Criteria	H	Substitute Criteria	Soil Contact	Soll Le	Soil Leaching (Mod MASS.)	S.)	Solund Air
CHEMICAL PARAMETER	Soil MOL	βg	Bkgrd.	Value	MOEE Neth. C	C Value	Basis	S1 Risk	SAGWI	S-VGWZ	8-KGW3	SVA
ACETONE												12000
ALDRIN												0.83
BENZENE												(0.19) 33
BENZO(a)PYRENE												300000
BIS(2-CHLOROETHYL)ETHER												0.81
BIS(2-CHLOROISOPROPYL)ETHER												5.1
BIS(2-ETHYLHEXYL)PHTHALATE												1000000
BROMOFORM												14
BROMOMETHANE												80'0
CARBON TETRACHLORIDE										-		(0,044) 0,64
CHLORDANE												110
CHLOROBENZENE												(20) 90
CHLOROFORM												(0 069) 4.9
DICHLOROBENZENE, 1,2- (o-DCB)	1											1700
DICHLOROBENZENE, 1,4- (p-DCB)												2200
001												2900
DICHLOROETHANE, 1,1.												140
DICHLOROETHANE, 1,2-									0.05			0.14
DICHLOROETHYLENE, 1,1-												0.015
DICHLOROPROPANE, 1,2-												0,17
DICHLOROPROPENE, 1,3-									9.04			0.041
DIELDRIN												1.3
ETHYL BENZENE												1800
ETHYLENE DIBROMIDE								0.01 ¢				0 03\$
HEPTACHLOR								0.12 €				0 53
HEPTACHLOR EPOXIDE												13
HEXACHLOROBENZENE												7.1
HEXACHLOROBUTADIENE									2.2			2.4
HEXACHLOROETHANE								6,3 nc				24

MODINA PIAR TRATURED BOTH	TABLE A: COMPONENTS FOR MOEE SOIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - POTABLE GROUNDWATER SITUATION - MEDIUM/FINE TEXTURED SOILS	R MOEE SC	OIL REME	DIATION	CRITERIA	(SURFAC	SOILS	EPTH) - P(OTABLE G	ROUNDWAT	ER SITUATI	ION - MEDIL	JM/FINE TE	XTURED
MOEE MASS OPT Soil Celing Ecotomociny Criterios Soil MOL POL Buggar, Value ROEE Neth C lailue Buggar, Value MOEE Neth C lailue Soil Roik METHAT, ERTONE	MEDIUM/FINE TEXTURED SOIL						RESIDEA	TIALPARKL	AND CATEG	ORY (ug/g)				
National Parameters		MOEE	MASS.	ONT Soil	Celling	Ecotoxic	ty Criteria	Substitute	Criteria	Soll Contact	Soff	Soil Leaching (Mod. MASS.)	ASS.)	SolVInd Air
WETHYL ETHYL KETONE WETHYL ESBUTYL KETONE WETHYL LEOBUTYL KETONE WETHYL LEOBUTYL KETONE WETHYL LEOBUTYL KETONE WETHYLL CHARLEN ETHYLLENE WETHYLLOROPHENOL FERTACHLOROPHENOL PHENOL STYRENE TETRACHLOROPHENOL FERTACHLOROPHENOL PHENOL STYRENE TETRACHLOROPETHYLENE FERTACHLOROPHENOL TETRACHLOROPETHYLENE FERTACHLOROPHENOL TRICHLOROPETHYLENE FERTACHLOROPHENOL TRICHLOROPHENOL 1.1.2- TRICHLOROPHENOL FERTACHLOROPHENOL TRICHLOROPHENOL	CHEMICAL PARAMETER	Soil MDL	ğ	Bkgrd.	Value	MOEE	Neth. C	Value	Basis	S1 Risk	SAGWI	SYGNZ	SYGWS	S/A
WETHAL ISOBUTAL KETONE WETHAL ISOBUTAL KETONE WETHAL ISOBUTAL KETONE KETHAL STORINGE WETHAL STORINGE KETHAL STORINGE WETHAL STORINGE KETHAL STORINGE PHENDA KETHAL STORINGE STYRENE KETHAL STORINGE TITTALCHLOROETHANIE, 1,1,2.* KETHAL STORINGE TRICHLOROETHANIE, 1,1,2.* KETHAL STORINGE TRICHLOROETHANIE, 1,1,2.* KETHAL STORINGE TRICHLOROETHANIE, 1,1,2.* KIRCHLOROETHANIE, 1,1,2.* TRICHLOROETHANIE, 1,1,2.* KIRCHLOROETHANIE, 1,1,2	METHYL ETHYL KETONE													11000
WETHYL TERT BUTNLEHER WETHYL TERT BUTNLEHER WETHYL LEND BUTNLEHER MAPTHALENE WETHYLORDER MAPTHALENE PENTACHLOROPHINAL MAPTHALENE PENTACHLOROPHANOL MAPTHALENE STYRENE MAPTHALENE TETRACHLOROETHANE, 11,12- MAPTHALENE TETRACHLOROETHANE, 11,12- MAPTHALENE TRICHLOROETHANE, 11,1- MAP	METHYL ISOBUTYL KETONE													360
WETHYLENE CHLORIDE WETHYLENE CHLORIDE RETHYLUAPHTHALENE	METHYL TERT BUTYL ETHER													740
WETHYLUARDHITALENE WETHYLUARDHITALENE (**)	METHYLENE CHLORIDE													840
MAPHTHALENE	METHYLNAPHTHALENE, 2- (*1-)													1800
PERTACHLOROPHENOL PERTACHLOROPHENOL PERTACHLOROPHENOL PERTACHLOROETHANE, 1,1,1,2. PERTACHLOROETHANE, 1,1,1,2. PERTACHLOROETHANE, 1,1,1,2. PERTACHLOROETHANE, 1,1,1. PERTACHLOR 1,1,1. PERTACHLOR 1,1,1. PERTACHLOR 1,1,1,1. PERTACHLOR 1,1,1,1. PERTA	NAPHTHALENE													760
PHENOL STYRENE TETRACHLORGETHANE, 1,1,2.*- TETRACHLORGETHANE, 1,1,2.*- TETRACHLORGETHANE, 1,1,2.*- TETRACHLORGETHANE, 1,1,2.*- TRICHLORGETHANE, 1,1,1.*- TRICHLORGETHANE, 1,1,1.*- TRICHLORGETHANE, 1,1,1.*- TRICHLORGETHANE, 1,1,1.*- TRICHLORGETHANE, 1,1,2.*- T	PENTACHLOROPHENOL													7300
STYRENE TETRACHLCROETHANE, 1,1,2.*- TETRACHLCROETHANE, 1,1,2.*- TETRACHLCROETHANE, 1,1,2.*- TETRACHLCROETHANE, 1,1,1.*- TRICHLCROETHANE, 1,1,1.*- TRICHLCROETHANE, 1,1,1.*- TRICHLCROETHANE, 1,1,1.*- TRICHLCROETHANE, 1,1,2.*- TRICHCROETHANE, 1,1,2.*- T	PHENOL													290000
TETRACHLOROETHANE, 1,1,2- TETRACHLOROETHANE, 1,1,2- TETRACHLOROETHANE, 1,1,2- TETRACHLOROETHANE, 1,1,2- TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,2- TRICHLOROET	STYRENE													(28) 7.7
TETRACHLOROETHANE, 1,1,2 TETRACHLOROETHANE, 1,1,2 TETRACHLOROETHANE, 1,1,2 TRICHLOROETHANE, 1,1,1 TRICHLOROETHANE, 1,1,1 TRICHLOROETHANE, 1,1,2 TRICHLOROETHA	TETRACHLOROETHANE, 1,1,1,2-													212
TETRACHLOROETHYLENE TOLUENE TRICHLOROETHYLENE TRICHLOROETHANE, 1,1,1-	TETRACHLOROETHANE, 1,1,2,2-													0.23
TRICHLOROEENZENE, 1,2,4 TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,2- TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,2- TRICHLOROETHANE, 1,1,2- TRICHLOROETHANE, 1,1,2- TRICHLOROETHANE, 1,1,2- TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1- TRICHLOROETHANE,	TETRACHLOROETHYLENE													(24) 140
TRICHLOROEPIANE, 1,2,4 TRICHLOROEPIANE, 1,1,1- TRICHLOROETHANE, 1,1,2- TRICHLOROETHANE,	TOLUENE													210
TRICHLOROETHANE, 1,1,1- TRICHLOROETHANE, 1,1,2- TRICHLOROETHANE, 1,1,	TRICHLOROBENZENE, 1,2,4													940
TRICHLOROETHANE, 1,1,2. TRICHLOROETHANE, 1,1,2. TRICHLOROETHALENE TRICHLOROPHENOL 2,4,6. VINYL CHLORIDE XYLENES C Cancel Risk row Noncancer Risk + SI Risk Value determined from human health boxicity data derived by MOEE Standards Devalopment Branch staff - MOEE Soil Clean-up Guideline (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff - MOEE Soil Clean-up Guideline (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff. (1) Value in brackets is based on meeting the indoor air cancer risk concentration which is below the indoor air background concentration used in the Mass approach. (7) 2-methyl reportation and it the sum of the two concentrations cannot cannot available.	TRICHLOROETHANE, 1,1,1-													160
TRICHLOROPHONOL 2,4,6- VINYL CHLORIDE XYLENES C Cancer Risk nc Noncancer Risk S ST Risk Value determined from human health toxicity data derived by MOEE Standards Devalopment Branch staff NOEE Soil Clean-up Guidelina (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff. (1) Value in bracketta is based on meeting the indoor all cancer risk concentration which is below the indoor all background concentration used in the Mass approach. (2) Value in bracketta is based on meeting the indoor all cancer risk concentration that if both are detected in soil, the sum of the two concentrations cannot cannot available.	TRICHLOROETHANE, 1,1,2-													(1.2) 580
TRICHLORIDE YINYL CHLORIDE YYLENES C Cancer Risk nc Noncancer Risk + S1 Risk Value determined from human health toxicity data derived by MOEE Standards Devalopment Branch staff - MOEE Soil Clean-up Guideline (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff - MOEE Soil Clean-up Guideline (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff - MOEE Soil Crean-up Guideline (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff. (1) Value in brackets is based on meeting the indoor air cancer risk concentration which is below the indoor air background concentrations cannot concentration and available to 1-methyl raphthalene with the provision that if both are detected in soil, the sum of the two concentrations cannot cannot available.	TRICHLOROETHYLENE										3.8			(0.71) 66
XYLENES C Cancer Risik	TRICHLOROPHENOL 2,4,6-													7200
c Cancer Risk no Noncancer Risk + S1 Risk Value determined from human health boxicity data derived by MOEE Standards Development Branch staff • MOEE Soil Clean-up Guidelline (SCUG) for boron is besed on a hot water extract, and was developed by MOEE Standards Development Branch staff. (1) Value in brackets is based on meeting the indoor all cancer risk concentration which is below the Indoor all background concentration used in this Mass approach. (1-) 2-methyl respitations soil criterion is applicable to 1-methyl respitatione with the provision that if both are detected in soil, the sum of the two concentrations cannot available.	VINYL CHLORIDE													0,0075
c Cancer Risk no Noncancer Risk + S1 Risk Value determined from human health boxicity data derived by MOEE Standards Development Branch staff * MOEE Soil Clean-up Guidelline (SCUG) for boron is based on a hot waite extract, and was developed by MOEE Standards Development Branch staff (1) Value in brackets is based on meeting the indoor all cancer risk concentration which is below the indoor all background concentration used in this Mass approach. (1-) 2-methyl rephthalism soil criterion is applicable to 1-methyl raphthalene with the provision that if both are detacted in soil, the sum of the two concentrations cannot available.	XYLENES													210
SI Risk Value determined from human health toxicity data derived by MOEE Standards Development Branch staff MOEE Soil Clean-up Guidelina (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff. Value in brackets is based on meeting the indoor air cancer risk concentration which is below the indoor air background concentration used in the Mass approach. (1-) 2-methyl raphthalisms soil criterion is applicable to 1-methyl raphthalene with the provision that if both are detected in soil, the sum of the two concentrations cannot soll criterion or available.														
MOEE Soil Clean-up Guidelina (SCUG) for boron is based on a hot water extract, and was developed by MOEE Standards Development Branch staff. () Value in brackets is based on meeting the indoor air cancer risk concentration which is below the indoor air background concentration used in the Mass approach. (1-) 2-methyl rephthalishe soil criterion is applicable to 1-methyl rephthalene with the provision that if both are detected in soil, the sum of the two concentrations cannot be soil criterion and assistate.	+ S1 Risk Value determined from human i	health toxicity	data derived	by MOEE Star	ndands Devalo	pment Branc	th staff							
() Value in brackets is based on meeting the indoor air cancer risk concentration which is below the indoor air background concentration used in the Mass approach. (1-) 2-methyl rephthalene soil criterion is applicable to 1-methyl rephthalene with the provision that if both are detected in soil, the aum of the two concentrations cannot a Sail criterion and assistate.	* MOEE Soil Clean-up Guidelina (SCUG)	for boron is be	nsed on a ho	t water extract.	, and was dev	reloped by Mi	OEE Standard	B Developmen	t Branch staff					
(°1-) 2-methyl nephtheliene soil criterion is applicable to 1-methyl nephtheliene with the provision that if both are detected in soil, the aum of the two concentrations cannot entering and selected in soil, the aum of the two concentrations cannot entering an experience.	() Value in brackets is based on meeting (the indoor air o	cancer risk o	ncentration wi	hich is below	the Indoor air	backgound co	oncentration u	sed in the Ma	iss approach.				
	(*1-) 2-methyl naphthalana soll criterion is ap	plicable to 1-rr	nethyl naphth	alene with the	provision that	t if both are d	leacted in soll,	the sum of th	e two concer	trations cannot ex	ceed the soil crit	terion.		
	** Soil criterion not available													

TABLE A: COMPONENTS FOR MOEE SO	MOEE S	OIL REME	DIATION	CRITERIA	(SURFAC	SOILS	EPTH) - P	OTABLE (IIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - POTABLE GROUNDWATER SITUATION - MEDIUM/FINE TEXTURED SOILS	ER SITUATI	ON - MEDIU	M/FINE TE.	KTURED
MEDIUM/FINE TEXTURED BOIL						INDUSTR	NALICOMMER	INDUSTRIAL/COMMERCIAL CATEGORY (1/9/g)	3ORY (ug/g)				
	MOEE	MASS.	ONT Soll	Celling	Ecotoxicity Criteria	y Criteria	Substitute Criteria	Criteria	Soil Contact	Soll Le	Soil Leaching (Mod. MASS.)	ASS)	Solvind Air
CHEMICAL PARAMETER	Soll MDL	PQL	Bkgrd.	Value	MOEE	Neth. C	Value	Basis	S2 Risk	S-/GW1	S-YGWZ	SAGM3	S/IA
ACETONE													12000
ALDRIN													0 83
BENZENE													(0.19) 33
BENZO(a)PYRENE													300000
BIS(2-CHLOROETHYL)ETHER													0.61
BIS(2-CHLOROISOPROPYL)ETHER													6.1
BIS(2-ETHYLHEXYL)PHTHALATE	L												100000
BROMOFORM													14
BROMOMETHANE													\$ 7 B
CARBON TETRACHLORIDE													(0.044) 0.64
CHLORDANE													110
CHLOROBENZENE													(20) 20
CHLOROFORM													(0.069) 4.9
DICHLOROBENZENE, 1,2- (~DCB)													1700
DICHLOROBENZENE, 1,4- (p-DCB)													5200
рот													2300
DICHLOROETHANE, 1,1-													140
DICHLOROETHANE, 1,2-										0.05			0.14
DICHLOROETHYLENE, 1,1-													0.015
DICHLOROPROPANE, 1,2-													D 12
DICHLOROPROPENE, 1,3-										0.04			0.041
DIELDRIN													1.3
ETHYL BENZENE													1800
ETHYLENE DIBROMIDE										0.012			0.035
HEPTACHLOR												0.15	0.53
HEPTACHLOR EPOXIDE													13
								Ī					

Erratum - Rationale for the Development and Application of Genetic Solf, Groundwater and Sediment Criteria for Use at Contaminated Siles in Ontario - 1996
December 3, 1996

HEXACHLOROBUTADIENE HEXACHLOROETHANE

HEXACHLOROBENZENE

TABLE A: COMPONENTS FOR MOEE SOI	MOEE SC	OIL REME	DIATION	RITERIA	(SURFACI	SOILS	- (HI 4-	OIABLE	L REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - POTABLE GROUNDWATER SITUATION - MEDIUM/FINE TEXTURED SOILS	ER SITUAT	ION - MEDI	UM/FINE TE	XTURED
MEDIUM/FINE TEXTURED SOIL						INDUSTR	IALICOMME	INDUSTRIAL COMMERCIAL CATEGORY (1949)	SORY (ug/g)				
	MOEE	MASS.	ONT SOF	Celling	Ecotoxicit	Ecotoxicity Criteria	Substitut	Substitute Criterie	Soil Contact	Soll	Soil Leaching (Mod. MASS.)	MASS.)	Solvind Air
CHEMICAL PARAMETER	Soli MDL	ğ	Bkgrd.	Value	MOEE	Neth. C	Value	Basis	S2 Risk	SAGWI	S-YGW2	SYGW3	S/A
METHYL ETHYL KETONE													11000
METHYL ISOBUTYL KETONE													360
METHYL TERT BUTYL ETHER													740
METHYLENE CHLORIDE													940
METHYLNAPHTHALENE, 2- (*1-)													1800
NAPHTHALENE													760
PENTACHLOROPHENOL													7300
PHENOL.													290000
STYRENE													(2.8) 7.7
TETRACHLOROETHANE, 1,1,1,2-													27.0
TETRACHLOROETHANE, 1,1,2,2-													0.23
TETRACHLOROETHYLENE													(24) 140
TOLUENE													210
TRICHLOROBENZENE, 1,2,4-													540
TRICHLOROETHANE, 1,1,1-		L											160
TRICHLOROETHANE, 1,1,2-													(1.2) 580
TRICHLOROETHYLENE										3.5			(0.71) 86
TRICHLOROPHENOL 2,4,6-													7200
VINYL CHLORIDE													0.0075
XYLENES													210
c Cancer Risk no Noncencer Risk													
+ 8-2 Risk Value determined from human health toxicity data derived by MOEE Standards Development Branch staff	health toxicity	data derive	d by MOEE Sta	indards Deve	lopment Bran	ich staff.							
MOEE Soil Clean-up Guideline (SCUG) for boron is be) for boron is t		sed on a hot water extract, and was developed by MOEE Standards Development Branch staff	t, and was de	veloped by M	IOEE Standar	ds Developm	ent Branch st	ııff				
" Inorganic mercury criteria used	*** Soil criterion not available	on not availa	Die.										
() Value in brackets is besed on meeting the indoor sir car	he indoor air c	ancer risk co	ncer risk concentration which is below the Indoor air backgound concentration used in the Mass. approach.	ich is below t	he indoor air	backgound or	ncentration	med in the Mi	sss. approach.				
(1.) 2-metry/inaptitalerie soll criterion is applicable to 1-metry/ naptitalene with the provision that if both are detacted in the soll, the sum of the two concentrations cannot exceed the soil criterion.	policable to 1-	nethyl napht	halene with the	provision the	if if both are o	detected in the	soil, the sur	n of the two c	oncentrations carv	not exceed the s	ioil criterion.		

TABLE B: COMPONENTS FOR MOEE		SOIL REA	MEDIATION	V CRITER	A (SURFA	(SURFACE/FULL D	EPTH) - NC	N-POTABL	SOIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - NON-POTABLE GROUNDWATER SITUATION - MEDIUMNE TEXTURED SOILS	VATER SITU	ATION - MED	IURINE
MEDIUM/FINE TEXTURED SOIL						RESIDE	RESIDENTIAL/PARKLAND (49/g)	(B/Gn) QN1				
	MOEE	MASS	ONT Soll	Celling	Ecotoxid	Ecotoxicity Criteria	Substitute Criteria	Criteria	Soil Contact	Soil Leaching (Mod. MASS)	(Mod. MASS)	SolVInd Air
CHEMICAL PARAMETER	Soil MDL	β	Bkgrd.	Value	MOEE	Neth. C	Value	Baste	S1 Risk	S-VGW2	S-YGW3	SNA
a) NO LIVE												12000
ACEIONE						Ī		I				0 03
ALDRIN								T				20.00
BENZENE						35						(0.19) 33
BENZO(a)PYRENE												300000
BIS(2-CHLOROETHYL)ETHER												0.81
BIS(2-CHLOROISOPROPYL)ETHER												5.1
BIS(2-ETHYLHEXYL)PHTHALATE												1000000
ВКОМОГОЯМ												14
BROMOMETHANE												0.34
CARBON TETRACHLORIDE												(0.044) 0.64
CHLORDANE												110
CHLOROBENZENE						3.6						(20) 80
CHLOROFORM												(0.069) 4.8
DICHLOROBENZENE, 1,2- (o-DCB)												1700
DICHLOROBENZENE, 1,4- (P-DCB)												9200
DDT												2900
DICHLOROETHANE, 1,1-				100								140
DICHLOROETHANE, 1,2-												9.14
DICHLOROETHYLENE, 1,1.												6.015
DICHLOROPROPANE, 1,2-												0.12
DICHLOROPROPENE, 1,3-												0,041
DIELDRIN												1.3
ETHYLBENZENE				\$60								1800
ETHYLENE DIBROMIDE									ሲ የን			0 035
HEPTACHLOR									0.12 ¢			0.53
HEPTACHLOR EPOXIDE												13
HEXACHLOROBENZENE												71
HEXACHLOROBUTADIENE												77
HEXACHLOROETHANE									6.3 ne			24

TABLE B: COMPONENTS FOR MOE	OR MOEE	SOIL REA	MEDIATION	N CRITER	A (SURF)	(SURFACE/FULL I	DEPTH) - N	ON-POTAB	E SOIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - NON-POTABLE GROUNDWATER SITUATION - MEDIUMNE TEXTURED SOILS	WATER SITU	ATION - ME	NUMNE
MEDIUM/FINE TEXTURED SOIL						RESID	RESIDENTIAL/PARKLAND (19/9)	AND (ug/g)				
	MOEE	MASS.	ONT Soll	Ceiling	Ecotoxic	Ecotoxicity Criteria	Substitut	Substitute Criteria	Soil Contact	Soil Leaching	Soil Leaching (Mod. MASS.)	Solvind Air
CHEMICAL PARAMETER	Soll MDL	ď	Bkgrd.	Value	MOEE	Neth. C	Value	Basis	S1 Risk	S-YGW2	S-YGW3	S/A
METHYL ETHYL KETONE												11000
METHYL ISOBUTYL KETONE										69	89	360
METHYL TERT BUTYL ETHER												740
METHYLENE CHLORIDE												840
METHYLNAPHTHALENE, 2- (*1-)				1006								1800
NAPHTHALENE												760
PENTACHLOROPHENOL												7300
PHENOL												290000
STYRENE												(2.6) 7.7
TETRACHLOROETHANE, 1,1,1,2-												0,12
TETRACHLOROETHANE, 1,1,2,2-												0.73
TETRACHLOROETHYLENE												(24) 140
TOLUENE						150						210
TRICHLOROBENZENE, 1,2,4-												940
TRICHLOROETHANE, 1,1,1-												160
TRICHLOROETHANE, 1,1,2-												(1.2) 560
TRICHLOROETHYLENE							3.8	Table A*				(0.71) 6.6
TRICHLOROPHENOL 2,4,6-												7200
VINYL CHLORIDE												0.0075
XYLENES												210
c Cancer Risk no Noncancer Risk												
+ S-1 Risk Value determined from human health toxicity data derived by MOEE Standards Development Branch staff	health toxicity	data derived	by MOEE Sta	ndards Devek	pment Branch	h staff.						
MOEE Soil Clean-up Guideline (SCUG) for boron is	for boron is be	sed on a hor	water extract	and was dev	eloped by MO	s based on a hot water extract, and was developed by MOEE Standards Development Branch staff	evelopment Bra		Soll criterion not available	of available.		
a Soil criterion from Table A (potable groundwater al		petdobe (no:	tuation) adopted to account for degradation to vinyl chloride	degradation	to vinyi chlorid	.04						
() Value in brackets is based on meeting the indoors		ancer risk co	ncentration w	nich is below t	he indoor air t	seckgound con	pesn ungaque	ir cancer risk concentration which is below the Indoor air background concentration used in the Mass, approach,	proach.			
(*1-) 2-methyl naphthalene soll criterion is applicable to	oplicable to 1-m	ethyl naphth	alene with the	provision that	if both are de	bcted in the so	i, the aum of th	e two concentra	1-methyl naphtralene with the provision that if both are deboted in the soll, the sum of the two concentrations cannot exceed the soil oriterion.	d the soil criterion.		

TABLE B: COMPONENTS FOR MOE	R MOEE	SOIL REM	EDIATION	CRITERI	A (SURFA	(SURFACE/FULL DI	EPTH) - NO	N-POTABLE	E SOIL REMEDIATION CRITERIA (SURFACE/FULL DEPTH) - NON-POTABLE GROUNDWATER SITUATION - MEDIUM/FINE	TER SITUAT	ION - MEDIU	M/FINE
MEDIUMFINE TEXTURED SOIL						INDUSTRIAL	INDUSTRIAL/COMMERCIAL CATEGORY (vg/g)	CATEGORY (u	(0/0			
	MOEE	MASS.	ONT Soll	Celling	Ecotoxi	Ecotoxicity Criteria	Substitut	Substitute Criteria	Soil Contact	Soll Leaching	Soll Leaching (Mod. MASS.)	Solvind Air
CHEMICAL PARAMETER	Soll MDL	PQL	Bkgrd.	Value	MOEE	Neth. C	Value	Baeis	S2 Risk	S-rGW2	S-/GW3	SAA
ACETONE												12000
ALDRIN												0 83
BENZENE						æ						(0.19) 33
BENZO(a)PYRENE												300000
BIS(2-CHLOROETHYL)ETHER												180
BIS(2-CHLOROISOPROPYL)ETHER									2,6 €			5.1
BIS(2-ETHYLHEXYL)PHTHALATE												1000000
BROMOFORM												
BROMOMETHANE												0.38
CARBON TETRACHLORIDE												(0.044) 0.64
CHLORDANE												110
CHLOROBENZENE						36						(20) 80
CHLOROFORM												6.5 (830 0)
DICHLOROBENZENE, 1,2- (o-DCB)												1700
DICHLOROBENZENE, 1,4- (p-DCB)												9200
рот												2900
DICHLOROETHANE, 1,1-												1449
DICHLOROETHANE, 1,2-												0.14
DICHLOROETHYLENE, 1,1-												0,015
DICHLOROPROPANE, 1,2-												0.12
DICHLOROPROPENE, 1,3-												0,041
DIELDRIN												1.3
ETHYL BENZENE				4000								1800
ETHYLENE DIBROMIDE									0.62 0			0.035
HEPTACHLOR											0.15	0.53
HEPTACHLOR EPOXIDE												13

Erratum - Rationale for the Development and Application of Generic Solf, Groundwater and Sediment Criterie for Use at Contaminated Siles in Ontario - 1996
VERRATRAZ SDB

HEXACHLOROBENZENE
HEXACHLOROBUTADIENE
HEXACHLOROETHANE

₩

CHEMICAL PARAMETER MOEE MASS. CAFING CAFING CAFING CAFING Subscript Chemical Portacioner Subscript Chemical Portacioner Subscript Chemical Portacioner MACENTAL ESCHORICH Chemical Portacioner Chemical Portacione	Criteria Subettute Criteria Sol Corract Neth. C Value Baela S2 Risk 2008 MOEE 2	Sof Leaching (Mod. MASS.) S-CSW2 S-CSW3 419 410 410 1600	Solvind Air S/A 11000 360 740 1800 780 7300
EER MOCE Neth. C Value MOCE Neth. C Value No. C I Value III	Baels Baels MOEE 2	Sof Leaching (Mod. MASS.) S-/GWZ S-/GWS S-/GWS 410 410 410 1600	Solfind Air SrA 11000 360 740 1800 7300
(*1-) (*1-)	Basis MOEE 2	83 83 110 100	11000 360 740 1800 760 7300
(*1-) NS (gasklesel) 1,2- 1,2- 1,2- 1,2- 1,3- 1,3-		=	11000 360 740 840 1800 7300
(*1-) (*1-) NS (gaakdesel) NS (22-) (*2-)		-	11000 360 740 840 1800 7300
(*1-) NS (gaaldezel) NS (22-)			360 740 840 1800 780 7300
(*1-) NS (gaakdeset) .1,22,2-			740 840 1800 760 7300
71-) NS (gas/dese) 1,2- 1,2- 1,2-		-	1800 1800 7300 7300
NS (gaskleset) 1,2. (2,2.			1800 760 7300
N/S (gau/deser) 1,2- 1,2- 1,2- 1,3-			7300
NAS (graucitenes) 1.1.2. 1.2.2.			7300
2,2-			OC.
1,2-			
1,2-			290000
.2.2-			
			(4-0)
			(44) 140
TRICK OPPORTURE			210
CALCACETANE, 1,1-			540
TRICHLOROETHANE, 1,1,2.			160
			(12) 580
OL 2,4,6-	3.6 Table A"		(0.71) 66
VINY CHLORIDE			7200
XYLENES			6.0075
C. Cancer Resk, no Noncencer Rink			240
8-2 Rink Value determined from human health toxicity data derhand hy MOCE Structure			
MOEE Soil Clean-up Guideline (SCUG) for boron is based on a hot water. Some contracts Development Branch staff.			
(*1-) 2-methyl naphthalene soil criterion is epplicable to 1-methyl naphthalene men.	Branch staff.		
() Value in bracterta is based on meeting the indoor air cannot risk concentrations cannot exceed the soft criterion.	if the two concentrations cannot exceed t	ne soll criterion.	
not available.	:	Inorganic mercury criteria sace	

8. Revisions to Appendix B.1.4: Derivation of Leaching-Based Soil Concentrations (Coarse Textured Soils).

Appendix B.1.4 is a spreadsheet (Excel 5.0) which requires the following revisions:

- a) Replace the pyrene value of 0.04 in the "GW-3 Standard (ug/L)" column of the spreadsheet with the value 40. This will result (via cell formula) in a revised pyrene value of 252 in the column labelled "S-GW3 (mg/kg)".
- b) Also, in order to simplify the spreadsheet so that it more closely matches the modifications made by MOEE to the original Massachusetts process, the last nine columns ("S-1/GW1 to S-3/GW3") can be deleted for all chemical parameters. These column deletions will not affect the calculation of leaching-based soil values.
- 9. Revisions to Appendix B.1.5: Derivation of Leaching-Based Soil Concentrations (Medium-Fine Textured Soils).

Appendix B.1.5 is a spreadsheet (Excel 5.0) which requires the following revisions:

- a) As in the previous spreadsheet, replace the pyrene value of 0.04 in the "GW-3 Standard (ug/L)" column of the spreadsheet with the value 40. This will result (via cell formula) in a revised pyrene value of 252 in the column labelled "S-GW3 (mg/kg)".
- b) Again, in order to simplify the spreadsheet, the last nine columns ("S-1/GW1 to S-3/GW3") can be deleted for all chemical parameters. These column deletions will not affect the calculation of leaching-based soil values.
- 10. Revisions to Appendix B.1.6: Derivation of GW-1 and GW-3 Groundwater Concentrations.

Appendix B.1.6 is a spreadsheet (Excel 5.0) which requires the following revisions:

- a) Replace the pyrene value of 0.004 in the column labelled "Lowest Ambient Water Quality Criteria" of the spreadsheet with the value 4. This will result in a revised pyrene value of 40 in the third last column in the spreadsheet labelled "Groundwater GW-3 Proposed Standard (Raw value) ug/L".
- b) The value of 40 must also be manually entered into the second last column labelled "Groundwater GW-3 Proposed Standard (rounded) ug/L".
- c) The spreadsheet formula will replace "MDL-DW" with "LOEL" in the final "Basis" column for pyrene.

11. Revisions to Appendix B.1.10: Derivation of Soil-to-Indoor Air Concentrations (Medium/Fine Textured Soils).

Appendix B.1.10 is a spreadsheet (Excel 5.0) which requires the following revisions:

- a) For each chemical in the spreadsheet, the Csp (soil particle conc.) value in Column G is derived by a mathematical function using corresponding values from Column B, C and F. This mathematical function requires the addition of a 6.25 factor in the numerator to correctly derive soil-to-indoor air concentrations for medium/fine textured soils.
- b) For example, using Acetone which occupies row 10 in the spreadsheet, the corrected mathematical function is (F10*B10*0.00000024*6.25)/C10 which replaced the incorrect mathematical function (F10*B10*0.00000024)/C10.

Note: The corrected mathematical function to derive Csp (soil particle conc.) results in the model generating new values for Csw (soil water conc.) as well.

12. Revision to Appendix B.4: U.S. EPA Ambient Water Quality Criteria (AWQC) for Fresh Water and Lowest Observable Effects Levels (LOELs) for Fresh Water Organisms from the Aquatic Information and Retrieval System (AQUIRE) Database.

The table in Appendix B.4 requires only one correction:

a) The pyrene value of 0.004 (ug/L) in the table column entitled AQUIRE FWLOEL is replaced with the value 4 (ug/L).

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For those who do not currently have a copy of this document, all new requests after this date will contain the revised information.

For additional information on these changes, please contact:

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We regret any inconvenience these changes may have caused.





